



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Atty. Docket No: XEN/001

re patent application of

DAHIYAT, BASSIL et al.

Serial No. 10/082,671

Filed: February 22, 2002

For: USE OF NUCLEIC ACID LIBRARIES TO CREATE TOXICOLOGICAL PROFILES

STATEMENT TO SUPPORT FILING AND SUBMISSION IN
ACCORDANCE WITH 37 C.F.R. §§ 1.821-1.825

Assistant Commissioner for Patents
Washington, D.C. 20231
Box SEQUENCE

Sir:

In connection with a Sequence Listing submitted concurrently herewith, the undersigned hereby states that:

1. the submission, filed herewith in accordance with 37 C.F.R. § 1.821(g), does not include new matter;

2. the content of the attached paper copy and the attached computer readable copy of the Sequence Listing, submitted in accordance with 37 C.F.R. § 1.821(c) and (e), respectively, are the same; and

3. all statements made herein of their own knowledge are true and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United


Express Mail No.
EF230793065US

Serial No. 10/082,671

States Code and that such willful false statements may jeopardize the validity of the application or any patent resulting therefrom.

Respectfully submitted,

May 13, 2002
Date


James A. Coburn

HARBOR CONSULTING
Intellectual Property Services
1500A Lafayette Road
Suite 262
Portsmouth, N.H.
800-318-3021



SEQUENCE LISTING

<110> DAHIYAT, BASSIL
LI, MIN

<120> USE OF NUCLEIC ACID LIBRARIES TO CREATE TOXICOLOGICAL
PROFILES

<130> XEN/001

<140> 10/082,671

<141> 2002-02-22

<150> 60/270,781

<151> 2001-02-22

<160> 58

<170> PatentIn Ver. 2.1

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 <213> adeno-associated virus 2

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<212> PRT

<213> adeno-associated virus 2

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 Thr Lys Lys Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
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 Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro
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 Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
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 Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
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 Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
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 Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
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<212> DNA

<213> adeno-associated virus 2

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<213> adeno-associated virus 4

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 Thr Val Gly Val Lys Ser Met Val Val Gly Arg Tyr Val Ser Gln Ile
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 Lys Glu Lys Leu Val Thr Arg Ile Tyr Arg Gly Val Glu Pro Gln Leu
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 Pro Asn Trp Phe Ala Val Thr Lys Thr Arg Asn Gly Ala Gly Gly Gly
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 Thr Gln Pro Glu Leu Gln Trp Ala Trp Thr Asn Met Asp Gln Tyr Ile
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 Ser Ala Cys Leu Asn Leu Ala Glu Arg Lys Arg Leu Val Ala Gln His
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 Leu Thr His Val Ser Gln Thr Gln Glu Gln Asn Lys Glu Asn Gln Asn
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 Pro Asn Ser Asp Ala Pro Val Ile Arg Ser Lys Thr Ser Ala Arg Tyr
 210 215 220
 Met Glu Leu Val Gly Trp Leu Val Asp Arg Gly Ile Thr Ser Glu Lys
 225 230 235 240
 Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
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 Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Ser Lys
 260 265 270
 Ile Met Ser Leu Thr Lys Thr Ala Pro Asp Tyr Leu Val Gly Gln Asn
 275 280 285
 Pro Pro Glu Asp Ile Ser Ser Asn Arg Ile Tyr Arg Ile Leu Glu Met
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 Gln Lys Lys Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
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 Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
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<210> 13

<211> 623

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<213> adeno-associated virus 3B

<400> 13

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 Asn Lys Val Val Asp Asp Cys Tyr Ile Pro Asn Tyr Leu Leu Pro Lys
 145 150 155 160
 Thr Gln Pro Glu Leu Gln Trp Ala Trp Thr Asn Met Asp Gln Tyr Leu
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 Ser Ala Cys Leu Asn Leu Ala Glu Arg Lys Arg Leu Val Ala Gln His
 180 185 190
 Leu Thr His Val Ser Gln Thr Gln Glu Gln Asn Lys Glu Asn Gln Asn
 195 200 205
 Pro Asn Ser Asp Ala Pro Val Ile Arg Ser Lys Thr Ser Ala Arg Tyr
 210 215 220
 Met Glu Leu Val Gly Trp Leu Val Asp Arg Gly Ile Thr Ser Glu Lys
 225 230 235 240
 Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
 245 250 255
 Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Ser Lys
 260 265 270
 Ile Met Ser Leu Thr Lys Thr Ala Pro Asp Tyr Leu Val Gly Ser Asn
 275 280 285
 Pro Pro Glu Asp Ile Thr Lys Asn Arg Ile Tyr Gln Ile Leu Glu Leu
 290 295 300
 Asn Gly Tyr Asp Pro Gln Tyr Ala Ala Ser Val Phe Leu Gly Trp Ala
 305 310 315 320
 Gln Lys Lys Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
 325 330 335
 Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Ala Val Pro
 340 345 350
 Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
 355 360 365
 Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
 370 375 380

Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
385 390 395 400

Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Glu Pro Thr Pro Val
405 410 415

Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
420 425 430

Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
435 440 445

Glu Leu Thr Arg Arg Leu Asp His Asp Phe Gly Lys Val Thr Lys Gln
450 455 460

Glu Val Lys Asp Phe Phe Arg Trp Ala Ser Asp His Val Thr Asp Val
465 470 475 480

Ala His Glu Phe Tyr Val Arg Lys Gly Gly Ala Lys Lys Arg Pro Ala
485 490 495

Ser Asn Asp Ala Asp Val Ser Glu Pro Lys Arg Gln Cys Thr Ser Leu
500 505 510

Ala Gln Pro Thr Thr Ser Asp Ala Glu Ala Pro Ala Asp Tyr Ala Asp
515 520 525

Arg Tyr Gln Asn Lys Cys Ser Arg His Val Gly Met Asn Leu Met Leu
530 535 540

Phe Pro Cys Lys Thr Cys Glu Arg Met Asn Gln Ile Ser Asn Val Cys
545 550 555 560

Phe Thr His Gly Gln Arg Asp Cys Gly Glu Cys Phe Pro Gly Met Ser
565 570 575

Glu Ser Gln Pro Val Ser Val Val Lys Lys Lys Thr Tyr Gln Lys Leu
580 585 590

Cys Pro Ile His His Ile Leu Gly Arg Ala Pro Glu Ile Ala Cys Ser
595 600 605

Ala Cys Asp Leu Ala Asn Val Asp Leu Asp Asp Cys Val Ser Glu
610 615 620

<210> 14

<211> 1875

<212> DNA

<213> adeno-associated virus 3B

<400> 14

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tctgacatgg atccgaatct gattgagcag gcacccctga ccgtggccga aaagcttcag 180
cgcgagttcc tgggtggagt ggcgcgcgtg agtaaggccc cggaggccct cttttttgtc 240
cagttcgaaa agggggagac ctacttcac ctgcacgtgc tgattgagac catcgggggtc 300
aaatccatgg tggtcggccg ctacgtgagc cagattaaag agaagctggt gacccgcac 360

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accagcccg agctccagt ggcgtggact aacatggacc agtattttaag cgctgtttg 540
aatctcgcg agcgtaaag gctgggtggc cagcatctga cgcacgtgtc gcagacgcag 600
gagcagaaca aagagaatca gaacccaat tctgacgcgc cggatcatcag gtcaaaaacc 660
tcagccaggt acatggagct ggtcgggtgg ctgggtggacc gcgggatcac gtcagaaaag 720
caatggatto aggaggacca ggctcgtac atctccttca acgccgcctc caactcgcg 780
tcccagatca aggccgcgt ggacaatgcc tccaagatca tgagcctgac aaagacggct 840
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atcctggagc tgaacgggta cgatccgcag tacgcggcct ccgtcttctt gggctgggcg 960
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gtttctgtcg tcaaaaagaa gacttatcag aaactgtgtc caattcatca tatctgggga 1800
agggcaccgg agattgcctg ttcggcctgc gatttggcca atgtggactt ggatgactgt 1860
gtttctgagc aataa 1875

```

<210> 15

<211> 624

<212> PRT

<213> adeno-associated virus 3

<400> 15

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Met Pro Gly Phe Tyr Glu Ile Val Leu Lys Val Pro Ser Asp Leu Asp
  1             5             10             15

```

```

Glu Arg Leu Pro Gly Ile Ser Asn Ser Phe Val Asn Trp Val Ala Glu
      20             25             30

```

```

Lys Glu Trp Asp Val Pro Pro Asp Ser Asp Met Asp Pro Asn Leu Ile
      35             40             45

```

```

Glu Gln Ala Pro Leu Thr Val Ala Glu Lys Leu Gln Arg Glu Phe Leu
      50             55             60

```

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Val Glu Trp Arg Arg Val Ser Lys Ala Pro Glu Ala Leu Phe Phe Val
      65             70             75             80

```

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Gln Phe Glu Lys Gly Glu Thr Tyr Phe His Leu His Val Leu Ile Glu
      85             90             95

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Thr Ile Gly Val Lys Ser Met Val Val Gly Arg Tyr Val Ser Gln Ile
      100            105            110

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Lys Glu Lys Leu Val Thr Arg Ile Tyr Arg Gly Val Glu Pro Gln Leu
      115            120            125

```

Pro Asn Trp Phe Ala Val Thr Lys Thr Arg Asn Gly Ala Gly Gly Gly
 130 135 140
 Asn Lys Val Val Asp Asp Cys Tyr Ile Pro Asn Tyr Leu Leu Pro Lys
 145 150 155 160
 Thr Gln Pro Glu Leu Gln Trp Ala Trp Thr Asn Met Asp Gln Tyr Leu
 165 170 175
 Ser Ala Cys Leu Asn Leu Ala Glu Arg Lys Arg Leu Val Ala Gln His
 180 185 190
 Leu Thr His Val Ser Gln Thr Gln Glu Gln Asn Lys Glu Asn Gln Asn
 195 200 205
 Pro Asn Ser Asp Ala Pro Val Ile Arg Ser Lys Thr Ser Ala Arg Tyr
 210 215 220
 Met Glu Leu Val Gly Trp Leu Val Asp Arg Gly Ile Thr Ser Glu Lys
 225 230 235 240
 Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
 245 250 255
 Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Ser Lys
 260 265 270
 Ile Met Ser Leu Thr Lys Thr Ala Pro Asp Tyr Leu Val Gly Ser Asn
 275 280 285
 Pro Pro Glu Asp Ile Thr Lys Asn Arg Ile Tyr Gln Ile Leu Glu Leu
 290 295 300
 Asn Gly Tyr Asp Pro Gln Tyr Ala Ala Ser Val Phe Leu Gly Trp Ala
 305 310 315 320
 Gln Lys Lys Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
 325 330 335
 Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Ala Val Pro
 340 345 350
 Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
 355 360 365
 Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
 370 375 380
 Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
 385 390 395 400
 Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Glu Pro Thr Pro Val
 405 410 415
 Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
 420 425 430

Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Glu Phe
 435 440 445
 Glu Leu Thr Arg Arg Leu Asp His Asp Phe Gly Lys Val Thr Lys Gln
 450 455 460
 Glu Val Lys Asp Phe Phe Arg Trp Ala Ser Asp His Val Thr Asp Val
 465 470 475 480
 Ala His Glu Phe Tyr Val Arg Lys Gly Gly Ala Lys Lys Arg Pro Ala
 485 490 495
 Ser Asn Asp Ala Asp Val Ser Glu Pro Lys Arg Glu Cys Thr Ser Leu
 500 505 510
 Ala Gln Pro Thr Thr Ser Asp Ala Glu Ala Pro Ala Asp Tyr Ala Asp
 515 520 525
 Arg Tyr Gln Asn Lys Cys Ser Arg His Val Gly Met Asn Leu Met Leu
 530 535 540
 Phe Pro Cys Lys Thr Cys Glu Arg Met Asn Gln Ile Ser Asn Val Cys
 545 550 555 560
 Phe Thr His Gly Gln Arg Asp Cys Gly Glu Cys Phe Pro Gly Met Ser
 565 570 575
 Glu Ser Gln Pro Val Ser Val Val Lys Lys Lys Thr Tyr Gln Lys Leu
 580 585 590
 Cys Pro Ile His His Ile Leu Gly Arg Ala Pro Glu Ile Ala Cys Ser
 595 600 605
 Ala Cys Asp Leu Ala Asn Val Asp Leu Asp Asp Cys Val Ser Glu Gln
 610 615 620

<210> 16

<211> 1875

<212> DNA

<213> adeno-associated virus 3

<400> 16

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 tctgacatgg atccgaatct gattgagcag gcacccctga ccgtggccga aaagcttcag 180
 cgcgagttcc tgggtggagtg gcgcgcgtg agtaaggccc cggaggccct cttttttgtc 240
 cagttcgaaa agggggagac ctacttccac ctgcacgtgc tgattgagac catcgggggtc 300
 aaatccatgg tggtcgggccg ctacgtgagc cagattaaag agaagctggt gaccgcgcatc 360
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 gccggggggc ggaacaaggt ggtggacgac tgctacatcc ccaactacct gctccccaag 480
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 aatctcgccg agcgtaaacc gctggtggcg cagcatctga cgcacgtgtc gcagacgcag 600
 gacgagaaca aagagaatca gaaccccaat tctgacgcgc cgggtcatcag gtcaaaaacc 660
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 caatggattc aggaggacca ggccctcgta atctccttca acgccgcctc caactcgcgg 780
 tcccagatca aggccgcgct ggacaatgcc tccaagatca tgagcctgac aaagacggct 840
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atcctggagc tgaacgggta cgatccgcag tacgcggcct ccgtcttcct gggctgggcg 960
caaaagaagt tcgggaagag gaacaccatc tggctctttg ggccggccac gacgggtaaa 1020
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gtttctgtcg tcaaaaagaa gacttatcag aaactgtgtc caattcatca tatcctggga 1800
agggcaccg agattgcctg ttcggcctgc gatttgcca atgtggactt ggatgactgt 1860
gtttctgagc aataa 1875

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<210> 17

<211> 623

<212> PRT

<213> adeno-associated virus 1

<400> 17

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Met Pro Gly Phe Tyr Glu Ile Val Ile Lys Val Pro Ser Asp Leu Asp
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Glu His Leu Pro Gly Ile Ser Asp Ser Phe Val Ser Trp Val Ala Glu
      20              25              30

Lys Glu Trp Glu Leu Pro Pro Asp Ser Asp Met Asp Leu Asn Leu Ile
      35              40              45

Glu Gln Ala Pro Leu Thr Val Ala Glu Lys Leu Gln Arg Asp Phe Leu
      50              55              60

Val Gln Trp Arg Arg Val Ser Lys Ala Pro Glu Ala Leu Phe Phe Val
      65              70              75              80

Gln Phe Glu Lys Gly Glu Ser Tyr Phe His Leu His Ile Leu Val Glu
      85              90              95

Thr Thr Gly Val Lys Ser Met Val Leu Gly Arg Phe Leu Ser Gln Ile
      100             105             110

Arg Asp Lys Leu Val Gln Thr Ile Tyr Arg Gly Ile Glu Pro Thr Leu
      115             120             125

Pro Asn Trp Phe Ala Val Thr Lys Thr Arg Asn Gly Ala Gly Gly Gly
      130             135             140

Asn Lys Val Val Asp Glu Cys Tyr Ile Pro Asn Tyr Leu Leu Pro Lys
      145             150             155             160

Thr Gln Pro Glu Leu Gln Trp Ala Trp Thr Asn Met Glu Glu Tyr Ile
      165             170             175

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Ser Ala Cys Leu Asn Leu Ala Glu Arg Lys Arg Leu Val Ala Gln His
 180 185 190
 Leu Thr His Val Ser Gln Thr Gln Glu Gln Asn Lys Glu Asn Leu Asn
 195 200 205
 Pro Asn Ser Asp Ala Pro Val Ile Arg Ser Lys Thr Ser Ala Arg Tyr
 210 215 220
 Met Glu Leu Val Gly Trp Leu Val Asp Arg Gly Ile Thr Ser Glu Lys
 225 230 235 240
 Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
 245 250 255
 Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
 260 265 270
 Ile Met Ala Leu Thr Lys Ser Ala Pro Asp Tyr Leu Val Gly Pro Ala
 275 280 285
 Pro Pro Ala Asp Ile Lys Thr Asn Arg Ile Tyr Arg Ile Leu Glu Leu
 290 295 300
 Asn Gly Tyr Glu Pro Ala Tyr Ala Gly Ser Val Phe Leu Gly Trp Ala
 305 310 315 320
 Gln Lys Arg Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
 325 330 335
 Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Ala Val Pro
 340 345 350
 Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
 355 360 365
 Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
 370 375 380
 Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
 385 390 395 400
 Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
 405 410 415
 Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
 420 425 430
 Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
 435 440 445
 Glu Leu Thr Arg Arg Leu Glu His Asp Phe Gly Lys Val Thr Lys Gln
 450 455 460
 Glu Val Lys Glu Phe Phe Arg Trp Ala Gln Asp His Val Thr Glu Val
 465 470 475 480

Ala His Glu Phe Tyr Val Arg Lys Gly Gly Ala Asn Lys Arg Pro Ala
485 490 495

Pro Asp Asp Ala Asp Lys Ser Glu Pro Lys Arg Ala Cys Pro Ser Val
500 505 510

Ala Asp Pro Ser Thr Ser Asp Ala Glu Gly Ala Pro Val Asp Phe Ala
515 520 525

Asp Arg Tyr Gln Asn Lys Cys Ser Arg His Ala Gly Met Leu Gln Met
530 535 540

Leu Phe Pro Cys Lys Thr Cys Glu Arg Met Asn Gln Asn Phe Asn Ile
545 550 555 560

Cys Phe Thr His Gly Thr Arg Asp Cys Ser Glu Cys Phe Pro Gly Val
565 570 575

Ser Glu Ser Gln Pro Val Val Arg Lys Arg Thr Tyr Arg Lys Leu Cys
580 585 590

Ala Ile His His Leu Leu Gly Arg Ala Pro Glu Ile Ala Cys Ser Ala
595 600 605

Cys Asp Leu Val Asn Val Asp Leu Asp Asp Cys Val Ser Glu Gln
610 615 620

<210> 18

<211> 1872

<212> DNA

<213> adeno-associated virus 1

<400> 18

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cgcgacttcc tgggtccaatg gcgcccgtg agtaaggccc cggaggccct cttctttgtt 240
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gccggagggg ggaacaagggt ggtggacgag tgctacatcc ccaactacct cctgcccagg 480
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tctgagcaat aa 1872

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<210> 19

<211> 623

<212> PRT

<213> adeno-associated virus 6

<400> 19

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Met Pro Gly Phe Tyr Glu Ile Val Ile Lys Val Pro Ser Asp Leu Asp
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Glu His Leu Pro Gly Ile Ser Asp Ser Phe Val Asn Trp Val Ala Glu
      20              25              30

Lys Glu Trp Glu Leu Pro Pro Asp Ser Asp Met Asp Leu Asn Leu Ile
      35              40              45

Glu Gln Ala Pro Leu Thr Val Ala Glu Lys Leu Gln Arg Asp Phe Leu
      50              55              60

Val Gln Trp Arg Arg Val Ser Lys Ala Pro Glu Ala Leu Phe Phe Val
      65              70              75              80

Gln Phe Glu Lys Gly Glu Ser Tyr Phe His Leu His Ile Leu Val Glu
      85              90              95

Thr Thr Gly Val Lys Ser Met Val Leu Gly Arg Phe Leu Ser Gln Ile
      100             105             110

Arg Asp Lys Leu Val Gln Thr Ile Tyr Arg Gly Ile Glu Pro Thr Leu
      115             120             125

Pro Asn Trp Phe Ala Val Thr Lys Thr Arg Asn Gly Ala Gly Gly Gly
      130             135             140

Asn Lys Val Val Asp Glu Cys Tyr Ile Pro Asn Tyr Leu Leu Pro Lys
      145             150             155             160

Thr Gln Pro Glu Leu Gln Trp Ala Trp Thr Asn Met Glu Glu Tyr Ile
      165             170             175

Ser Ala Cys Leu Asn Leu Ala Glu Arg Lys Arg Leu Val Ala His Asp
      180             185             190

Leu Thr His Val Ser Gln Thr Gln Glu Gln Asn Lys Glu Asn Leu Asn
      195             200             205

Pro Asn Ser Asp Ala Pro Val Ile Arg Ser Lys Thr Ser Ala Arg Tyr
      210             215             220

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Met Glu Leu Val Gly Trp Leu Val Asp Arg Gly Ile Thr Ser Glu Lys
 225 230 235 240
 Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
 245 250 255
 Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
 260 265 270
 Ile Met Ala Leu Thr Lys Ser Ala Pro Asp Tyr Leu Val Gly Pro Ala
 275 280 285
 Pro Pro Ala Asp Ile Lys Thr Asn Arg Ile Tyr Arg Ile Leu Glu Leu
 290 295 300
 Asn Gly Tyr Asp Pro Ala Tyr Ala Gly Ser Val Phe Leu Gly Trp Ala
 305 310 315 320
 Gln Lys Arg Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
 325 330 335
 Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Ala Val Pro
 340 345 350
 Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
 355 360 365
 Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
 370 375 380
 Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
 385 390 395 400
 Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
 405 410 415
 Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
 420 425 430
 Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
 435 440 445
 Glu Leu Thr Arg Arg Leu Glu His Asp Phe Gly Lys Val Thr Lys Gln
 450 455 460
 Glu Val Lys Glu Phe Phe Arg Trp Ala Gln Asp His Val Thr Glu Val
 465 470 475 480
 Ala His Glu Phe Tyr Val Arg Lys Gly Gly Ala Asn Lys Arg Pro Ala
 485 490 495
 Pro Asp Asp Ala Asp Lys Ser Glu Pro Lys Arg Ala Cys Pro Ser Val
 500 505 510
 Ala Asp Pro Ser Thr Ser Asp Ala Glu Gly Ala Pro Val Asp Phe Ala
 515 520 525

Asp Arg Tyr Gln Asn Lys Cys Ser Arg His Ala Gly Met Leu Gln Met
530 535 540

Leu Phe Pro Cys Lys Thr Cys Glu Arg Met Asn Gln Asn Phe Asn Ile
545 550 555 560

Cys Phe Thr His Gly Thr Arg Asp Cys Ser Glu Cys Phe Pro Gly Val
565 570 575

Ser Glu Ser Gln Pro Val Val Arg Lys Arg Thr Tyr Arg Lys Leu Cys
580 585 590

Ala Ile His His Leu Leu Gly Arg Ala Pro Glu Ile Ala Cys Ser Ala
595 600 605

Cys Asp Leu Val Asn Val Asp Leu Asp Asp Cys Val Ser Glu Gln
610 615 620

<210> 20

<211> 1872

<212> DNA

<213> adeno-associated virus 6

<400> 20

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cgcgacttcc tgggtccagt ggcgcgcgtg agtaaggccc cggaggccct cttctttgtt 240
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gccggagggg ggaacaaggt ggtggacgag tgctacatcc ccaactacct cctgcccacg 480
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<210> 21
 <211> 536
 <212> PRT
 <213> adeno-associated virus 2

<400> 21

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Glu	His	Leu	Pro	Gly	Ile	Ser	Asp	Ser	Phe	Val	Asn	Trp	Val	Ala	Glu
			20					25					30		
Lys	Glu	Trp	Glu	Leu	Pro	Pro	Asp	Ser	Asp	Met	Asp	Leu	Asn	Leu	Ile
			35				40					45			
Glu	Gln	Ala	Pro	Leu	Thr	Val	Ala	Glu	Lys	Leu	Gln	Arg	Asp	Phe	Leu
	50					55					60				
Thr	Glu	Trp	Arg	Arg	Val	Ser	Lys	Ala	Pro	Glu	Ala	Leu	Phe	Phe	Val
	65				70					75					80
Gln	Phe	Glu	Lys	Gly	Glu	Ser	Tyr	Phe	His	Met	His	Val	Leu	Val	Glu
				85					90					95	
Thr	Thr	Gly	Val	Lys	Ser	Met	Val	Leu	Gly	Arg	Phe	Leu	Ser	Gln	Ile
			100					105					110		
Arg	Glu	Lys	Leu	Ile	Gln	Arg	Ile	Tyr	Arg	Gly	Ile	Glu	Pro	Thr	Leu
		115					120					125			
Pro	Asn	Trp	Phe	Ala	Val	Thr	Lys	Thr	Arg	Asn	Gly	Ala	Gly	Gly	Gly
	130					135					140				
Asn	Lys	Val	Val	Asp	Glu	Cys	Tyr	Ile	Pro	Asn	Tyr	Leu	Leu	Pro	Lys
	145				150					155					160
Thr	Gln	Pro	Glu	Leu	Gln	Trp	Ala	Trp	Thr	Asn	Met	Glu	Gln	Tyr	Leu
				165					170					175	
Ser	Ala	Cys	Leu	Asn	Leu	Thr	Glu	Arg	Lys	Arg	Leu	Val	Ala	Gln	His
			180					185					190		
Leu	Thr	His	Val	Ser	Gln	Thr	Gln	Glu	Gln	Asn	Lys	Glu	Asn	Gln	Asn
		195					200					205			
Pro	Asn	Ser	Asp	Ala	Pro	Val	Ile	Arg	Ser	Lys	Thr	Ser	Ala	Arg	Tyr
	210					215					220				
Met	Glu	Leu	Val	Gly	Trp	Leu	Val	Asp	Lys	Gly	Ile	Thr	Ser	Glu	Lys
	225				230					235					240
Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala
				245					250					255	
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys
			260					265					270		

Ile Met Ser Leu Thr Lys Thr Ala Pro Asp Tyr Leu Val Gly Gln Gln
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 Pro Val Glu Asp Ile Ser Ser Asn Arg Ile Tyr Lys Ile Leu Glu Leu
 290 295 300
 Asn Gly Tyr Asp Pro Gln Tyr Ala Ala Ser Val Phe Leu Gly Trp Ala
 305 310 315 320
 Thr Lys Lys Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
 325 330 335
 Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro
 340 345 350
 Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
 355 360 365
 Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
 370 375 380
 Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
 385 390 395 400
 Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
 405 410 415
 Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
 420 425 430
 Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
 435 440 445
 Glu Leu Thr Arg Arg Leu Asp His Asp Phe Gly Lys Val Thr Lys Gln
 450 455 460
 Glu Val Lys Asp Phe Phe Arg Trp Ala Lys Asp His Val Val Glu Val
 465 470 475 480
 Glu His Glu Phe Tyr Val Lys Lys Gly Gly Ala Lys Lys Arg Pro Ala
 485 490 495
 Pro Ser Asp Ala Asp Ile Ser Glu Pro Lys Arg Val Arg Glu Ser Val
 500 505 510
 Ala Gln Pro Ser Thr Ser Asp Ala Glu Ala Ser Ile Asn Tyr Ala Asp
 515 520 525
 Arg Leu Ala Arg Gly His Ser Leu
 530 535

<210> 22

<211> 1611

<212> DNA

<213> adeno-associated virus 2

<400> 22

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cgcgactttc tgacggaatg gcgccgtgtg agtaaggccc cggaggccct tttctttgtg 240
caatttgaga agggagagag ctacttccac atgcacgtgc tcgtggaaac caccggggtg 300
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aatctcacgg agcgtaaacg gttggtggcg cagcatctga cgcacgtgtc gcagacgcag 600
gagcagaaca aagagaatca gaatcccaat tctgatgcgc cggatgatcag atcaaaaact 660
tcagccaggt acatggagct ggtcgggtgg ctcgaggaca aggggattac ctcggagaag 720
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gatataagtg agcccaaacg ggtgcgcgag tcagttgcgc agccatcgac gtcagacgcg 1560
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<210> 23

<211> 536

<212> PRT

<213> adeno-associated virus 2

<400> 23

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Gly His Leu Pro Gly Ile Ser Asp Ser Phe Val Asn Trp Val Ala Glu
          20                      25                      30

Lys Glu Trp Glu Leu Pro Pro Asp Ser Asp Met Asp Leu Asn Leu Ile
          35                      40                      45

Glu Gln Ala Pro Leu Thr Val Ala Glu Lys Leu Gln Arg Asp Phe Leu
          50                      55                      60

Thr Glu Trp Arg Arg Val Ser Lys Ala Pro Glu Ala Leu Phe Phe Val
          65                      70                      75                      80

Gln Phe Glu Lys Gly Glu Ser Tyr Phe His Met His Val Leu Val Glu
          85                      90                      95

Thr Thr Gly Val Lys Ser Met Val Leu Gly Arg Phe Leu Ser Gln Ile
          100                      105                      110

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Arg	Glu	Lys	Leu	Ile	Gln	Arg	Ile	Tyr	Arg	Gly	Ile	Glu	Pro	Thr	Leu	115	120	125
Pro	Asn	Trp	Phe	Ala	Val	Thr	Lys	Thr	Arg	Asn	Gly	Ala	Gly	Gly	Gly	130	135	140
Asn	Lys	Val	Val	Asp	Glu	Cys	Tyr	Ile	Pro	Asn	Tyr	Leu	Leu	Pro	Lys	145	150	155
Thr	Gln	Pro	Glu	Leu	Gln	Trp	Ala	Trp	Thr	Asn	Met	Glu	Gln	Tyr	Leu	165	170	175
Ser	Ala	Cys	Leu	Asn	Leu	Thr	Glu	Arg	Lys	Arg	Leu	Val	Ala	Gln	His	180	185	190
Leu	Thr	His	Val	Ser	Gln	Thr	Gln	Glu	Gln	Asn	Lys	Glu	Asn	Gln	Asn	195	200	205
Pro	Asn	Ser	Asp	Ala	Pro	Val	Ile	Arg	Ser	Lys	Thr	Ser	Ala	Arg	Tyr	210	215	220
Met	Glu	Leu	Val	Gly	Trp	Leu	Val	Asp	Lys	Gly	Ile	Thr	Ser	Glu	Lys	225	230	235
Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala	245	250	255
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys	260	265	270
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln	275	280	285
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu	290	295	300
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala	305	310	315
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala	325	330	335
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro	340	345	350
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp	355	360	365
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala	370	375	380
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg	385	390	395
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val	405	410	415

Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
420 425 430

Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
435 440 445

Glu Leu Thr Arg Arg Leu Asp His Asp Phe Gly Lys Val Thr Lys Gln
450 455 460

Glu Val Lys Asp Phe Phe Arg Trp Ala Lys Asp His Val Val Glu Val
465 470 475 480

Glu His Glu Phe Tyr Val Lys Lys Gly Gly Ala Lys Lys Arg Pro Ala
485 490 495

Pro Ser Asp Ala Asp Ile Ser Glu Pro Lys Arg Val Arg Glu Ser Val
500 505 510

Ala Gln Pro Ser Thr Ser Asp Ala Glu Ala Ser Ile Asn Tyr Ala Asp
515 520 525

Arg Leu Ala Arg Gly His Ser Leu
530 535

<210> 24

<211> 1611

<212> DNA

<213> adeno-associated virus 2

<400> 24

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cgcgactttc tgacggaatg gcgccgtgtg agtaaggccc cggaggccct tttctttgtg 240
caatttgaga agggagagag ctacttccac atgcacgtgc tcgtggaaac caccggggtg 300
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<210> 25

<211> 397

<212> PRT

<213> adeno-associated virus 2

<400> 25

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Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
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Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
 35 40 45

Ile Met Ser Leu Thr Lys Thr Ala Pro Asp Tyr Leu Val Gly Gln Gln
 50 55 60

Pro Val Glu Asp Ile Ser Ser Asn Arg Ile Tyr Lys Ile Leu Glu Leu
 65 70 75 80

Asn Gly Tyr Asp Pro Gln Tyr Ala Ala Ser Val Phe Leu Gly Trp Ala
 85 90 95

Thr Lys Lys Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
 100 105 110

Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro
 115 120 125

Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
 130 135 140

Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
 145 150 155 160

Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
 165 170 175

Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
 180 185 190

Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
 195 200 205

Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
 210 215 220

Glu Leu Thr Arg Arg Leu Asp His Asp Phe Gly Lys Val Thr Lys Gln
 225 230 235 240

Glu Val Lys Asp Phe Phe Arg Trp Ala Lys Asp His Val Val Glu Val
 245 250 255

Glu His Glu Phe Tyr Val Lys Lys Gly Gly Ala Lys Lys Arg Pro Ala
 260 265 270

Pro Ser Asp Ala Asp Ile Ser Glu Pro Lys Arg Val Arg Glu Ser Val
275 280 285

Ala Gln Pro Ser Thr Ser Asp Ala Glu Ala Ser Ile Asn Tyr Ala Asp
290 295 300

Arg Tyr Gln Asn Lys Cys Ser Arg His Val Gly Met Asn Leu Met Leu
305 310 315 320

Phe Pro Cys Arg Gln Cys Glu Arg Met Asn Gln Asn Ser Asn Ile Cys
325 330 335

Phe Thr His Gly Gln Lys Asp Cys Leu Glu Cys Phe Pro Val Ser Glu
340 345 350

Ser Gln Pro Val Ser Val Val Lys Lys Ala Tyr Gln Lys Leu Cys Tyr
355 360 365

Ile His His Ile Met Gly Lys Val Pro Asp Ala Cys Thr Ala Cys Asp
370 375 380

Leu Val Asn Val Asp Leu Asp Asp Cys Ile Phe Glu Gln
385 390 395

<210> 26

<211> 1194

<212> DNA

<213> adeno-associated virus 2

<400> 26

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<210> 27

<211> 610

<212> PRT

<213> adeno-associated virus 5

<400> 27

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 Gln Ile Trp Glu Leu Pro Pro Glu Ser Asp Leu Asn Leu Thr Leu Val
 35 40 45
 Glu Gln Pro Gln Leu Thr Val Ala Asp Arg Ile Arg Arg Val Phe Leu
 50 55 60
 Tyr Glu Trp Asn Lys Phe Ser Lys Gln Glu Ser Lys Phe Phe Val Gln
 65 70 75 80
 Phe Glu Lys Gly Ser Glu Tyr Phe His Leu His Thr Leu Val Glu Thr
 85 90 95
 Ser Gly Ile Ser Ser Met Val Leu Gly Arg Tyr Val Ser Gln Ile Arg
 100 105 110
 Ala Gln Leu Val Lys Val Val Phe Gln Gly Ile Glu Pro Gln Ile Asn
 115 120 125
 Asp Trp Val Ala Ile Thr Lys Val Lys Lys Gly Gly Ala Asn Lys Val
 130 135 140
 Val Asp Ser Gly Tyr Ile Pro Ala Tyr Leu Leu Pro Lys Val Gln Pro
 145 150 155 160
 Glu Leu Gln Trp Ala Trp Thr Asn Leu Asp Glu Tyr Lys Leu Ala Ala
 165 170 175
 Leu Asn Leu Glu Glu Arg Lys Arg Leu Val Ala Gln Phe Leu Ala Glu
 180 185 190
 Ser Ser Gln Arg Ser Gln Glu Ala Ala Ser Gln Arg Glu Phe Ser Ala
 195 200 205
 Asp Pro Val Ile Lys Ser Lys Thr Ser Gln Lys Tyr Met Ala Leu Val
 210 215 220
 Asn Trp Leu Val Glu His Gly Ile Thr Ser Glu Lys Gln Trp Ile Gln
 225 230 235 240
 Glu Asn Gln Glu Ser Tyr Leu Ser Phe Asn Ser Thr Gly Asn Ser Arg
 245 250 255
 Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Thr Lys Ile Met Ser Leu
 260 265 270
 Thr Lys Ser Ala Val Asp Tyr Leu Val Gly Ser Ser Val Pro Glu Asp
 275 280 285
 Ile Ser Lys Asn Arg Ile Trp Gln Ile Phe Glu Met Asn Gly Tyr Asp
 290 295 300

Pro Ala Tyr Ala Gly Ser Ile Leu Tyr Gly Trp Cys Gln Arg Ser Phe
 305 310 315 320
 Asn Lys Arg Asn Thr Val Trp Leu Tyr Gly Pro Ala Thr Thr Gly Lys
 325 330 335
 Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro Phe Tyr Gly Cys
 340 345 350
 Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp Cys Val Asp Lys
 355 360 365
 Met Leu Ile Trp Trp Glu Glu Gly Lys Met Thr Asn Lys Val Val Glu
 370 375 380
 Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg Val Asp Gln Lys
 385 390 395 400
 Cys Lys Ser Ser Val Gln Ile Asp Ser Thr Pro Val Ile Val Thr Ser
 405 410 415
 Asn Thr Asn Met Cys Val Val Val Asp Gly Asn Ser Thr Thr Phe Glu
 420 425 430
 His Gln Gln Pro Leu Glu Asp Arg Met Phe Lys Phe Glu Leu Thr Lys
 435 440 445
 Arg Leu Pro Pro Asp Phe Gly Lys Ile Thr Lys Gln Glu Val Lys Asp
 450 455 460
 Phe Phe Ala Trp Ala Lys Val Asn Gln Val Pro Val Thr His Glu Phe
 465 470 475 480
 Lys Val Pro Arg Glu Leu Ala Gly Thr Lys Gly Ala Glu Lys Ser Leu
 485 490 495
 Lys Arg Pro Leu Gly Asp Val Thr Asn Thr Ser Tyr Lys Ser Leu Glu
 500 505 510
 Lys Arg Ala Arg Leu Ser Phe Val Pro Glu Thr Pro Arg Ser Ser Asp
 515 520 525
 Val Thr Val Asp Pro Ala Pro Leu Arg Pro Leu Asn Trp Asn Ser Arg
 530 535 540
 Tyr Asp Cys Lys Cys Asp Tyr His Ala Gln Phe Asp Asn Ile Ser Asn
 545 550 555 560
 Lys Cys Asp Glu Cys Glu Tyr Leu Asn Arg Gly Lys Asn Gly Cys Ile
 565 570 575
 Cys His Asn Val Thr His Cys Gln Ile Cys His Gly Ile Pro Pro Trp
 580 585 590
 Glu Lys Glu Asn Leu Ser Asp Phe Gly Asp Phe Asp Asp Ala Asn Lys
 595 600 605

Glu Gln
610

<210> 28
<211> 1833
<212> DNA
<213> adeno-associated virus 5

<400> 28
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<210> 29
<211> 312
<212> PRT
<213> adeno-associated virus 2

<400> 29
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Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
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Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
35 40 45

Ile Met Ser Leu Thr Lys Thr Ala Pro Asp Tyr Leu Val Gly Gln Gln
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 Pro Val Glu Asp Ile Ser Ser Asn Arg Ile Tyr Lys Ile Leu Glu Leu
 65 70 75 80
 Asn Gly Tyr Asp Pro Gln Tyr Ala Ala Ser Val Phe Leu Gly Trp Ala
 85 90 95
 Thr Lys Lys Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
 100 105 110
 Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro
 115 120 125
 Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
 130 135 140
 Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
 145 150 155 160
 Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
 165 170 175
 Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
 180 185 190
 Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
 195 200 205
 Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
 210 215 220
 Glu Leu Thr Arg Arg Leu Asp His Asp Phe Gly Lys Val Thr Lys Gln
 225 230 235 240
 Glu Val Lys Asp Phe Phe Arg Trp Ala Lys Asp His Val Val Glu Val
 245 250 255
 Glu His Glu Phe Tyr Val Lys Lys Gly Gly Ala Lys Lys Arg Pro Ala
 260 265 270
 Pro Ser Asp Ala Asp Ile Ser Glu Pro Lys Arg Val Arg Glu Ser Val
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 Ala Gln Pro Ser Thr Ser Asp Ala Glu Ala Ser Ile Asn Tyr Ala Asp
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 Arg Leu Ala Arg Gly His Ser Leu
 305 310

<210> 30

<211> 939

<212> DNA

<213> adeno-associated virus 2

<400> 30

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aactacgcag acagcttttg ggggcaacct cggacgagc 939

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<210> 31

<211> 627

<212> PRT

<213> Barbarie duck parvovirus

<400> 31

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Met Ala Phe Ser Arg Pro Leu Gln Ile Ser Ser Asp Lys Phe Tyr Glu
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Val Ile Ile Arg Leu Pro Ser Asp Ile Asp Gln Asp Val Pro Gly Leu
      20             25             30

Ser Leu Asn Phe Val Glu Trp Leu Ser Thr Gly Val Trp Glu Pro Thr
      35             40             45

Gly Ile Trp Asn Met Glu His Val Asn Leu Pro Met Val Thr Leu Ala
      50             55             60

Asp Lys Ile Lys Asn Ile Phe Ile Gln Arg Trp Asn Gln Phe Asn Gln
      65             70             75             80

Asp Glu Thr Asp Phe Phe Phe Gln Leu Glu Glu Gly Ser Glu Tyr Ile
      85             90             95

His Leu His Cys Cys Ile Ala Gln Gly Asn Val Arg Ser Phe Val Leu
      100            105            110

Gly Arg Tyr Met Ser Gln Ile Lys Asp Ser Ile Leu Arg Asp Val Tyr
      115            120            125

Glu Gly Lys Gln Val Lys Ile Pro Asp Trp Phe Ser Ile Thr Lys Thr
      130            135            140

Lys Arg Gly Gly Gln Asn Lys Thr Val Thr Ala Ala Tyr Ile Leu His
      145            150            155            160

Tyr Leu Ile Pro Lys Lys Gln Pro Glu Leu Gln Trp Ala Phe Thr Asn
      165            170            175

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Met	Pro	Leu	Phe	Thr	Ala	Ala	Ala	Leu	Cys	Leu	Gln	Lys	Arg	Gln	Glu	180	185	190
Leu	Leu	Asp	Ala	Phe	Gln	Glu	Ser	Glu	Met	Asn	Ala	Val	Val	Gln	Glu	195	200	205
Asp	Gln	Ala	Ser	Thr	Ala	Ala	Pro	Leu	Ile	Ser	Asn	Arg	Ala	Ala	Lys	210	215	220
Asn	Tyr	Ser	Asn	Leu	Val	Asp	Trp	Leu	Ile	Glu	Met	Gly	Ile	Thr	Ser	225	230	235
Glu	Lys	Gln	Trp	Leu	Thr	Glu	Asn	Lys	Glu	Ser	Tyr	Arg	Ser	Phe	Gln	245	250	255
Ala	Thr	Ser	Ser	Asn	Asn	Arg	Gln	Val	Lys	Ala	Ala	Leu	Glu	Asn	Ala	260	265	270
Arg	Ala	Glu	Met	Leu	Leu	Thr	Lys	Thr	Ala	Thr	Asp	Tyr	Leu	Ile	Gly	275	280	285
Lys	Asp	Pro	Val	Leu	Asp	Ile	Thr	Lys	Asn	Arg	Ile	Tyr	Gln	Ile	Leu	290	295	300
Lys	Leu	Asn	Asn	Tyr	Asn	Pro	Gln	Tyr	Val	Gly	Ser	Val	Leu	Cys	Gly	305	310	315
Trp	Val	Lys	Arg	Glu	Phe	Asn	Lys	Arg	Asn	Ala	Ile	Trp	Leu	Tyr	Gly	325	330	335
Pro	Ala	Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Ala	340	345	350
Val	Pro	Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	355	360	365
Asn	Asp	Cys	Val	Asp	Lys	Met	Leu	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	370	375	380
Thr	Asn	Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Ala	385	390	395
Val	Arg	Val	Asp	Gln	Lys	Cys	Lys	Gly	Ser	Val	Cys	Ile	Glu	Pro	Thr	405	410	415
Pro	Val	Ile	Ile	Thr	Ser	Asn	Thr	Asp	Met	Cys	Met	Ile	Val	Asp	Gly	420	425	430
Asn	Ser	Thr	Thr	Met	Glu	His	Arg	Ile	Pro	Leu	Glu	Glu	Arg	Met	Phe	435	440	445
Gln	Ile	Val	Leu	Ser	His	Lys	Leu	Glu	Gly	Asn	Phe	Gly	Lys	Ile	Ser	450	455	460
Lys	Lys	Glu	Val	Lys	Glu	Phe	Phe	Lys	Trp	Ala	Asn	Asp	Asn	Leu	Val	465	470	475

Pro Val Val Ser Glu Phe Lys Val Pro Thr Asn Glu Gln Thr Lys Leu
 485 490 495

Thr Glu Pro Val Pro Glu Arg Ala Asn Glu Pro Ser Glu Pro Pro Lys
 500 505 510

Ile Trp Ala Pro Pro Thr Arg Glu Glu Leu Glu Glu Ile Leu Arg Ala
 515 520 525

Ser Pro Glu Leu Phe Ala Ser Val Ala Pro Leu Pro Ser Ser Pro Asp
 530 535 540

Thr Ser Pro Lys Arg Lys Lys Thr Arg Gly Glu Tyr Gln Val Arg Cys
 545 550 555 560

Ala Met His Ser Leu Asp Asn Ser Met Asn Val Phe Glu Cys Leu Glu
 565 570 575

Cys Glu Arg Ala Asn Phe Pro Glu Phe Gln Ser Leu Gly Glu Asn Phe
 580 585 590

Cys Asn Gln His Gly Trp Tyr Asp Cys Ala Phe Cys Asn Glu Leu Lys
 595 600 605

Asp Asp Met Asn Glu Ile Glu His Val Phe Ala Ile Asp Asp Met Glu
 610 615 620

Asn Glu Gln
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<210> 32

<211> 1884

<212> DNA

<213> Barbarie duck parvovirus

<400> 32

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<210> 33

<211> 627

<212> PRT

<213> goose parvovirus

<400> 33

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Met Ala Leu Ser Arg Pro Leu Gln Ile Ser Ser Asp Lys Phe Tyr Glu
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Val Ile Ile Arg Leu Ser Ser Asp Ile Asp Gln Asp Val Pro Gly Leu
      20                      25                      30

Ser Leu Asn Phe Val Glu Trp Leu Ser Thr Gly Val Trp Glu Pro Thr
      35                      40                      45

Gly Ile Trp Asn Met Glu His Val Asn Leu Pro Met Val Thr Leu Ala
      50                      55                      60

Glu Lys Ile Lys Asn Ile Phe Ile Gln Arg Trp Asn Gln Phe Asn Gln
      65                      70                      75                      80

Asp Glu Thr Asp Phe Phe Phe Gln Leu Glu Glu Gly Ser Glu Tyr Ile
      85                      90                      95

His Leu His Cys Cys Ile Ala Gln Gly Asn Val Arg Ser Phe Val Leu
      100                      105                      110

Gly Arg Tyr Met Ser Gln Ile Lys Asp Ser Ile Ile Arg Asp Val Tyr
      115                      120                      125

Glu Gly Lys Gln Ile Lys Ile Pro Asp Trp Phe Ala Ile Thr Lys Thr
      130                      135                      140

Lys Arg Gly Gly Gln Asn Lys Thr Val Thr Ala Ala Tyr Ile Leu His
      145                      150                      155                      160

Tyr Leu Ile Pro Lys Lys Gln Pro Glu Leu Gln Trp Ala Phe Thr Asn
      165                      170                      175

Met Pro Leu Phe Thr Ala Ala Ala Leu Cys Leu Gln Lys Arg Gln Glu
      180                      185                      190

Leu Leu Asp Ala Phe Gln Glu Ser Asp Leu Ala Ala Pro Leu Pro Asp
      195                      200                      205

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Pro Gln Ala Ser Thr Val Ala Pro Leu Ile Ser Asn Arg Ala Ala Lys
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 245 250 255
 Ala Thr Ser Ser Asn Asn Arg Gln Val Lys Ala Ala Leu Glu Asn Ala
 260 265 270
 Arg Ala Glu Met Leu Leu Thr Lys Thr Ala Thr Asp Tyr Leu Ile Gly
 275 280 285
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 Lys Met Asn Asn Tyr Asn Pro Gln Tyr Ile Gly Ser Ile Leu Cys Gly
 305 310 315 320
 Trp Val Lys Arg Glu Phe Asn Lys Arg Asn Ala Ile Trp Leu Tyr Gly
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 Pro Ala Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Ala
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 Asn Asp Cys Val Asp Lys Met Leu Ile Trp Trp Glu Glu Gly Lys Met
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 Val Arg Val Asp Gln Lys Cys Lys Gly Ser Val Cys Ile Glu Pro Thr
 405 410 415
 Pro Val Ile Ile Thr Ser Asn Thr Asp Met Cys Met Ile Val Asp Gly
 420 425 430
 Asn Ser Thr Thr Met Glu His Arg Ile Pro Leu Glu Glu Arg Met Phe
 435 440 445
 Gln Ile Val Leu Ser His Lys Leu Glu Pro Ser Phe Gly Lys Ile Ser
 450 455 460
 Lys Lys Glu Val Arg Glu Phe Phe Lys Trp Ala Asn Asp Asn Leu Val
 465 470 475 480
 Pro Val Val Ser Glu Phe Lys Val Arg Thr Asn Glu Gln Thr Asn Leu
 485 490 495
 Pro Glu Pro Val Pro Glu Arg Ala Asn Glu Pro Glu Glu Pro Pro Lys
 500 505 510

Ile Trp Ala Pro Pro Thr Arg Glu Glu Leu Glu Glu Leu Leu Arg Ala
515 520 525

Ser Pro Glu Leu Phe Ser Ser Val Ala Pro Ile Pro Val Thr Pro Gln
530 535 540

Asn Ser Pro Glu Pro Lys Arg Ser Arg Asn Asn Tyr Gln Val Arg Cys
545 550 555 560

Ala Leu His Thr Tyr Asp Asn Ser Met Asp Val Phe Glu Cys Met Glu
565 570 575

Cys Glu Lys Ala Asn Phe Pro Glu Phe Gln Pro Leu Gly Glu Asn Tyr
580 585 590

Cys Asp Glu His Gly Trp Tyr Asp Cys Ala Ile Cys Lys Glu Leu Lys
595 600 605

Asn Glu Leu Ala Glu Ile Glu His Val Phe Glu Leu Asp Asp Ala Glu
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Asn Glu Gln
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<210> 34

<211> 1884

<212> DNA

<213> goose parvovirus

<400> 34

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<210> 35

<211> 626

<212> PRT

<213> Muscovy duck parvovirus

<400> 35

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Met Ala Phe Ser Arg Pro Leu Gln Ile Ser Ser Asp Lys Phe Tyr Glu
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      20              25              30

Ser Leu Asn Phe Val Glu Trp Leu Ser Thr Gly Val Trp Glu Pro Thr
      35              40              45

Gly Ile Trp Asn Met Glu His Val Asn Leu Pro Met Val Thr Leu Ala
  50              55              60

Asp Lys Ile Lys Asn Ile Phe Ile Gln Arg Trp Asn Gln Phe Asn Gln
  65              70              75              80

Asp Glu Thr Asp Phe Phe Phe Gln Leu Glu Glu Gly Ser Glu Tyr Ile
      85              90              95

His Leu His Ala Val Cys Pro Gly Glu Cys Arg Ser Phe Val Leu Gly
      100             105             110

Arg Tyr Met Ser Gln Ile Lys Asp Ser Ile Leu Arg Asp Val Tyr Glu
      115             120             125

Gly Lys Gln Val Lys Ile Pro Asp Trp Phe Ser Ile Thr Lys Thr Lys
      130             135             140

Arg Gly Gly Gln Asn Lys Thr Val Thr Ala Ala Tyr Ile Leu His Tyr
      145             150             155             160

Leu Ile Pro Lys Lys Gln Pro Glu Leu Gln Trp Ala Phe Thr Asn Met
      165             170             175

Pro Leu Phe Thr Ala Ala Ala Leu Cys Leu Gln Lys Arg Gln Glu Leu
      180             185             190

Leu Asp Ala Phe Gln Glu Ser Glu Met Asn Ala Val Val Gln Glu Asp
      195             200             205

Gln Ala Ser Thr Ala Ala Pro Leu Ile Ser Asn Arg Ala Ala Lys Asn
      210             215             220

Tyr Ser Asn Leu Val Asp Trp Leu Ile Glu Met Gly Ile Thr Ser Glu
      225             230             235             240

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Lys	Gln	Trp	Leu	Thr	Glu	Asn	Lys	Glu	Ser	Tyr	Arg	Ser	Phe	Gln	Ala	
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Thr	Ser	Ser	Asn	Asn	Arg	Gln	Val	Lys	Ala	Ala	Leu	Glu	Asn	Ala	Arg	
			260					265					270			
Ala	Glu	Met	Leu	Leu	Thr	Lys	Thr	Ala	Thr	Asp	Tyr	Leu	Ile	Gly	Lys	
		275					280					285				
Asp	Pro	Val	Leu	Asp	Ile	Thr	Lys	Asn	Arg	Ile	Tyr	Gln	Ile	Leu	Lys	
	290					295					300					
Leu	Asn	Asn	Tyr	Asn	Pro	Gln	Tyr	Val	Gly	Ser	Val	Leu	Cys	Gly	Trp	
305					310					315					320	
Val	Lys	Arg	Glu	Phe	Asn	Lys	Arg	Asn	Ala	Ile	Trp	Leu	Tyr	Gly	Pro	
				325					330					335		
Ala	Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Ala	Val	
			340					345					350			
Pro	Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	
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Asp	Cys	Val	Asp	Lys	Met	Leu	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	
	370					375					380					
Asn	Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Ala	Val	
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Arg	Val	Asp	Gln	Lys	Cys	Lys	Gly	Ser	Val	Cys	Ile	Glu	Pro	Thr	Pro	
			405						410					415		
Val	Ile	Ile	Thr	Ser	Asn	Thr	Asp	Met	Cys	Met	Ile	Val	Asp	Gly	Asn	
			420					425					430			
Ser	Thr	Thr	Met	Glu	His	Arg	Ile	Pro	Leu	Glu	Glu	Arg	Met	Phe	Gln	
		435					440					445				
Ile	Val	Leu	Ser	His	Lys	Leu	Glu	Gly	Asn	Phe	Gly	Lys	Ile	Ser	Lys	
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Lys	Glu	Val	Lys	Glu	Phe	Phe	Lys	Trp	Ala	Asn	Asp	Asn	Leu	Val	Pro	
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Val	Val	Ser	Glu	Phe	Lys	Val	Pro	Thr	Asn	Glu	Gln	Thr	Lys	Leu	Thr	
				485					490					495		
Glu	Pro	Val	Pro	Glu	Arg	Ala	Asn	Glu	Pro	Ser	Glu	Pro	Pro	Lys	Ile	
			500					505					510			
Trp	Ala	Pro	Pro	Thr	Arg	Glu	Glu	Leu	Glu	Glu	Ile	Leu	Arg	Ala	Ser	
		515					520					525				
Pro	Glu	Leu	Phe	Ala	Ser	Val	Ala	Pro	Leu	Pro	Ser	Ser	Pro	Asp	Thr	
	530					535					540					

Ser Pro Lys Arg Lys Lys Thr Arg Gly Glu Tyr Gln Val Arg Cys Ala
545 550 555 560

Met His Ser Leu Asp Asn Ser Met Asn Val Phe Glu Cys Leu Glu Cys
565 570 575

Glu Arg Ala Asn Phe Pro Glu Phe Gln Ser Leu Gly Glu Asn Phe Cys
580 585 590

Asn Gln His Gly Trp Tyr Asp Cys Ala Phe Cys Asn Glu Leu Lys Asp
595 600 605

Asp Met Asn Glu Ile Glu His Val Phe Ala Ile Asp Asp Met Glu Asn
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Glu Gln
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<210> 36

<211> 1881

<212> DNA

<213> Muscovy duck parvovirus

<400> 36

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<210> 37
 <211> 461
 <212> PRT
 <213> goose parvovirus

<400> 37

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Ala	Ala	Leu	Cys	Leu	Gln	Lys	Arg	Gln	Glu	Leu	Leu	Asp	Ala	Phe	Gln
		20						25					30		
Glu	Ser	Asp	Leu	Ala	Ala	Pro	Leu	Pro	Asp	Pro	Gln	Ala	Ser	Thr	Val
		35					40					45			
Ala	Pro	Leu	Ile	Ser	Asn	Arg	Ala	Ala	Lys	Asn	Tyr	Ser	Asn	Leu	Val
	50					55					60				
Asp	Trp	Leu	Ile	Glu	Met	Gly	Ile	Thr	Ser	Glu	Lys	Gln	Trp	Leu	Thr
65					70					75					80
Glu	Asn	Arg	Glu	Ser	Tyr	Arg	Ser	Phe	Gln	Ala	Thr	Ser	Ser	Asn	Asn
				85					90					95	
Arg	Gln	Val	Lys	Ala	Ala	Leu	Glu	Asn	Ala	Arg	Ala	Glu	Met	Leu	Leu
		100						105					110		
Thr	Lys	Thr	Ala	Thr	Asp	Tyr	Leu	Ile	Gly	Lys	Asp	Pro	Val	Leu	Asp
	115						120					125			
Ile	Thr	Lys	Asn	Arg	Val	Tyr	Gln	Ile	Leu	Lys	Met	Asn	Asn	Tyr	Asn
	130					135					140				
Pro	Gln	Tyr	Ile	Gly	Ser	Ile	Leu	Cys	Gly	Trp	Val	Lys	Arg	Glu	Phe
145					150					155					160
Asn	Lys	Arg	Asn	Ala	Ile	Trp	Leu	Tyr	Gly	Pro	Ala	Thr	Thr	Gly	Lys
			165						170					175	
Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Ala	Val	Pro	Phe	Tyr	Gly	Cys
		180						185					190		
Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp	Cys	Val	Asp	Lys
	195						200					205			
Met	Leu	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Asn	Lys	Val	Val	Glu
	210					215					220				
Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Ala	Val	Arg	Val	Asp	Gln	Lys
225					230					235					240
Cys	Lys	Gly	Ser	Val	Cys	Ile	Glu	Pro	Thr	Pro	Val	Ile	Ile	Thr	Ser
			245						250					255	
Asn	Thr	Asp	Met	Cys	Met	Ile	Val	Asp	Gly	Asn	Ser	Thr	Thr	Met	Glu
			260					265					270		

His Arg Ile Pro Leu Glu Glu Arg Met Phe Gln Ile Val Leu Ser His
 275 280 285
 Lys Leu Glu Pro Ser Phe Gly Lys Ile Ser Lys Lys Glu Val Arg Glu
 290 295 300
 Phe Phe Lys Trp Ala Asn Asp Asn Leu Val Pro Val Val Ser Glu Leu
 305 310 315 320
 Lys Val Arg Thr Asn Glu Gln Thr Asn Leu Pro Glu Pro Val Pro Glu
 325 330 335
 Arg Ala Asn Glu Pro Glu Glu Pro Pro Lys Ile Trp Ala Pro Pro Thr
 340 345 350
 Arg Glu Glu Leu Glu Glu Leu Leu Arg Ala Ser Pro Glu Leu Phe Ser
 355 360 365
 Ser Val Ala Pro Ile Pro Val Thr Pro Gln Asn Ser Pro Glu Pro Lys
 370 375 380
 Arg Ser Arg Asn Asn Tyr Gln Val Arg Cys Ala Leu His Thr Tyr Asp
 385 390 395 400
 Asn Ser Met Asp Val Phe Glu Cys Met Glu Cys Glu Lys Ala Asn Phe
 405 410 415
 Pro Glu Phe Gln Pro Leu Gly Glu Asn Tyr Cys Asp Glu His Gly Trp
 420 425 430
 Tyr Asp Cys Ala Ile Cys Lys Glu Leu Lys Asn Glu Leu Ala Glu Ile
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<210> 38

<211> 1386

<212> DNA

<213> goose parvovirus

<400> 38

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<210> 39

<211> 711

<212> PRT

<213> chipmunk parvovirus

<400> 39

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Val Ile Lys Leu Pro Cys Pro Leu Glu Glu Val Leu Ser Asn Ser Gln
              20              25              30

Phe Trp Gln Tyr Tyr Val Leu Cys Lys Asp Pro Leu Asp Trp Pro Ala
              35              40              45

Leu Gln Val Thr Glu Leu Ala His Gly Trp Glu Val Gly Ala Tyr Cys
  50              55              60

Ala Phe Ala Asp Ala Leu Tyr Leu Tyr Leu Val Gly Arg Leu Ala Asp
  65              70              75              80

Glu Phe Ser Ala Tyr Leu Leu Phe Phe Gln Leu Glu Pro Gly Val Glu
              85              90              95

Asn Pro His Ile His Val Val Ala Gln Ala Thr Gln Leu Ser Ala Phe
 100              105              110

Asn Trp Arg Arg Ile Leu Thr Gln Ala Cys His Asp Met Ala Leu Gly
 115              120              125

Phe Leu Lys Pro Asp Tyr Leu Gly Trp Ala Lys Asn Cys Val Asn Ile
 130              135              140

Lys Lys Asp Lys Ser Gly Arg Ile Leu Arg Ser Asp Trp Gln Phe Val
 145              150              155              160

Glu Thr Tyr Leu Leu Pro Lys Val Pro Leu Ser Lys Val Trp Tyr Ala
 165              170              175

Trp Thr Asn Lys Pro Glu Phe Glu Pro Ile Ala Leu Ser Ala Ala Ala
 180              185              190

Arg Asp Arg Leu Met Arg Gly Asn Ala Leu Cys Asn Gln Pro Gly Pro
 195              200              205

Gly Pro Ser Phe Gly Asp Arg Ala Glu Ile Gln Gly Pro Pro Ile Lys
 210              215              220

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Lys Thr Lys Ala Ser Asp Glu Phe Tyr Thr Leu Cys His Trp Leu Ala
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 Gln Glu Gly Ile Leu Thr Glu Pro Ala Trp Arg Gln Arg Asp Leu Asp
 245 250 255
 Gly Tyr Val Arg Met His Thr Ser Thr Gln Gly Arg Gln Gln Val Val
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 Ser Ala Leu Ala Met Ala Lys Asn Ile Ile Leu Asp Ser Ile Pro Asn
 275 280 285
 Ser Val Phe Ala Thr Lys Ala Glu Val Val Thr Glu Leu Cys Phe Glu
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 Ser Asn Arg Cys Val Arg Leu Leu Arg Thr Gln Gly Tyr Asp Pro Val
 305 310 315 320
 Gln Phe Gly Cys Trp Val Leu Arg Trp Leu Asp Arg Lys Thr Gly Lys
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 Lys Asn Thr Ile Trp Phe Tyr Gly Val Ala Thr Thr Gly Lys Thr Asn
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 355 360 365
 Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp Ala Pro Asp Lys Cys Val
 370 375 380
 Leu Phe Trp Asp Glu Gly Arg Val Thr Ala Lys Ile Val Glu Ser Val
 385 390 395 400
 Lys Ala Val Leu Gly Gly Gln Asp Ile Arg Val Asp Gln Lys Cys Lys
 405 410 415
 Gly Ser Ser Phe Leu Arg Ala Thr Pro Val Ile Ile Thr Ser Asn Gly
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 Asp Met Thr Val Val Arg Asp Gly Asn Thr Thr Thr Phe Ala His Arg
 435 440 445
 Pro Ala Phe Lys Asp Arg Met Val Arg Leu Asn Phe Asp Val Arg Leu
 450 455 460
 Pro Asn Asp Phe Gly Leu Ile Thr Pro Thr Glu Val Arg Glu Trp Leu
 465 470 475 480
 Arg Tyr Cys Lys Glu Gln Gly Asp Asp Tyr Glu Phe Pro Asp Gln Met
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 Tyr Gln Phe Pro Arg Asp Val Val Ser Val Pro Ala Pro Pro Ala Leu
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 Pro Gln Pro Gly Pro Val Thr Asn Ala Pro Glu Glu Glu Ile Leu Asp
 515 520 525

Leu Leu Thr Gln Thr Asn Phe Val Thr Gln Pro Gly Leu Ser Ile Glu
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 Pro Ala Val Gly Pro Glu Glu Glu Pro Asp Val Ala Asp Leu Gly Gly
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 Ser Pro Ala Pro Ala Val Ser Ser Thr Thr Glu Ser Ser Ala Asp Glu
 565 570 575
 Asp Glu Asp Asp Asp Thr Ser Ser Ser Gly Asp His Arg Gly Gly Gly
 580 585 590
 Gly Gly Val Met Gly Asp Leu His Ala Ser Ser Ser Ser Phe Phe Thr
 595 600 605
 Ser Ser Asp Ser Gly Leu Pro Thr Ser Val Asn Thr Ser Asp Thr Pro
 610 615 620
 Phe Ser Phe Ser Pro Val Pro Val His His His Gly Pro Pro Thr Leu
 625 630 635 640
 Leu Pro Thr Ser Arg Pro Thr Arg Asp Leu Ala Arg Gly Arg Pro Ser
 645 650 655
 Phe Arg Gln Tyr Glu Pro Leu Lys Gly Arg Cys Ala Asp Ser Thr Thr
 660 665 670
 Phe Gly Arg Pro Ser Trp Ala Ala Pro Cys Ala Val Tyr Asn Thr Ala
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 Glu Leu Thr Arg Arg Gly Ala Gly Val Arg Val Val Lys Gly Ser Arg
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 Pro Gly Ala Ile Ser Gly Lys
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<210> 40

<211> 2136

<212> DNA

<213> chipmunk parvovirus

<400> 40

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<210> 41

<211> 672

<212> PRT

<213> pig-tailed macaque parvovirus

<400> 41

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      20             25             30

Asp Trp Pro Arg Leu Gln Gly Trp Glu Arg Leu Ile Ala His Leu Ile
      35             40             45

Val Lys Val Ala Gly Glu Phe Ala Val Pro Gly Gly Ser Thr Leu Gly
      50             55             60

Leu Gln Tyr Phe Leu Gln Ala Glu His Asn His Phe Asp Glu Gly Phe
      65             70             75             80

His Val His Val Val Val Gly Gly Pro Phe Val Thr Pro Arg Asn Val
      85             90             95

Cys Asn Ile Val Glu Thr Gly Phe Asn Lys Val Leu Arg Glu Leu Thr
      100            105            110

Glu Pro Thr Tyr Glu Val Ser Phe Lys Pro Ala Ile Ser Lys Lys Gly
      115            120            125

Lys Tyr Ala Arg Asp Gly Phe Asp Phe Val Thr Asn Tyr Leu Met Pro
      130            135            140

Lys Leu Tyr Pro Asn Val Val Tyr Ser Val Thr Asn Phe Ser Glu Tyr
      145            150            155            160

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Glu	Tyr	Val	Cys	Asn	Ser	Leu	Ala	Tyr	Arg	Arg	Asn	Met	His	Lys	Lys	165	170	175
Ala	Leu	Thr	Asn	Thr	Ala	Asp	Glu	Gly	Glu	Gly	Thr	Ser	Thr	Asn	Ser	180	185	190
Glu	Trp	Gly	Pro	Glu	Pro	Lys	Lys	Gln	Lys	Thr	Gly	Thr	Val	Arg	Gly	195	200	205
Glu	Lys	Phe	Val	Ser	Leu	Val	Asp	Ser	Leu	Ile	Glu	Arg	Gly	Ile	Phe	210	215	220
Thr	Glu	Asn	Lys	Trp	Lys	Gln	Val	Asp	Trp	Leu	Lys	Glu	Tyr	Ala	Cys	225	230	235
Leu	Ser	Gly	Ser	Val	Ala	Gly	Val	His	Gln	Ile	Lys	Thr	Ala	Leu	Thr	245	250	255
Leu	Ala	Ile	Ser	Lys	Cys	Asn	Ser	Pro	Glu	Tyr	Leu	Cys	Glu	Leu	Leu	260	265	270
Thr	Arg	Pro	Ser	Thr	Ile	Asn	Phe	Asn	Ile	Lys	Glu	Asn	Arg	Ile	Cys	275	280	285
Lys	Ile	Phe	Leu	Gln	Asn	Asp	Tyr	Asp	Pro	Leu	Tyr	Ala	Gly	Lys	Val	290	295	300
Phe	Leu	Ala	Trp	Leu	Gly	Lys	Glu	Leu	Gly	Lys	Arg	Asn	Thr	Ile	Trp	305	310	315
Leu	Phe	Gly	Pro	Pro	Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Met	Ser	Leu	325	330	335
Ala	Thr	Ala	Val	Pro	Ser	Tyr	Gly	Met	Val	Asn	Trp	Asn	Asn	Glu	Asn	340	345	350
Phe	Pro	Phe	Asn	Asp	Val	Pro	His	Lys	Ser	Ile	Ile	Leu	Trp	Asp	Glu	355	360	365
Gly	Leu	Ile	Lys	Ser	Thr	Val	Val	Glu	Ala	Ala	Lys	Ala	Ile	Leu	Gly	370	375	380
Gly	Gln	Asn	Cys	Arg	Val	Asp	Gln	Lys	Asn	Lys	Gly	Ser	Val	Glu	Val	385	390	395
Gln	Gly	Thr	Pro	Val	Leu	Ile	Thr	Ser	Asn	Asn	Asp	Met	Thr	Arg	Val	405	410	415
Val	Ser	Gly	Asn	Thr	Val	Thr	Leu	Ile	His	Gln	Arg	Ala	Leu	Lys	Asp	420	425	430
Arg	Met	Val	Glu	Phe	Asp	Leu	Thr	Val	Arg	Cys	Ser	Asn	Ala	Leu	Gly	435	440	445
Leu	Ile	Pro	Ala	Glu	Glu	Cys	Lys	Gln	Trp	Leu	Phe	Trp	Ser	Gln	His	450	455	460

Thr Pro Cys Asp Val Phe Ser Arg Trp Lys Glu Val Cys Glu Phe Val
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 Ala Trp Lys Ser Asp Arg Thr Gly Ile Cys Tyr Asp Phe Ser Glu Asn
 485 490 495
 Glu Asp Leu Pro Gly Thr Gln Thr Pro Leu Leu Asn Ser Pro Val Thr
 500 505 510
 Ser Lys Thr Ser Ala Leu Lys Lys Thr Ile Ala Ala Leu Ala Thr Ala
 515 520 525
 Ala Val Gly Thr Leu Gln Thr Ser Leu Thr Asn Asn Asn Trp Glu Ser
 530 535 540
 Ser Glu Asp Ser Gly Ser Pro Pro Arg Ser Ser Thr Pro Leu Ala Ser
 545 550 555 560
 Pro Glu Arg Gly Glu Val Pro Pro Gly Gln Gln Trp Glu Leu Asn Thr
 565 570 575
 Ser Val Asn Ser Val Asn Ala Leu Asn Trp Pro Met Tyr Thr Val Asp
 580 585 590
 Trp Val Trp Gly Ser Lys Ala Gln Arg Pro Val Cys Cys Leu Glu His
 595 600 605
 Asp Thr Glu Ser Ser Val His Cys Ser Leu Cys Leu Ser Leu Glu Val
 610 615 620
 Leu Pro Met Leu Ile Glu Asn Ser Ile Asn Gln Pro Asp Val Ile Arg
 625 630 635 640
 Cys Ser Ala His Ala Glu Cys Thr Asn Pro Phe Asp Val Leu Thr Cys
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 Lys Lys Cys Arg Glu Leu Ser Ala Leu Trp Ser Phe Val Lys Tyr Asp
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<210> 42

<211> 2019

<212> DNA

<213> pig-tailed macaque parvovirus

<400> 42

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<210> 43

<211> 687

<212> PRT

<213> Simian parvovirus

<400> 43

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Phe Ala Asn Asp Asn Trp Trp Cys Cys Phe Phe Gln Leu Asp Val Asp
      20              25              30

Asp Trp Pro Glu Leu Arg Gly Pro Glu Arg Leu Met Ala His Tyr Ile
      35              40              45

Cys Lys Val Ala Ala Leu Leu Asp Thr Pro Ser Gly Pro Phe Leu Gly
      50              55              60

Cys Lys Tyr Phe Leu Gln Val Glu Gly Asn His Phe Asp Asn Gly Phe
      65              70              75              80

His Ile His Val Val Ile Gly Gly Pro Phe Leu Thr Pro Arg Asn Val
      85              90              95

Cys Ser Ala Val Glu Gly Gly Phe Asn Lys Val Leu Ala Asp Phe Thr
      100             105             110

Ser Pro Thr Ile Thr Val Gln Phe Lys Pro Ala Val Ser Lys Lys Gly
      115             120             125

Lys Tyr His Arg Asp Gly Phe Asp Phe Val Thr Tyr Tyr Leu Met Pro
      130             135             140

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Lys	Leu	Tyr	Pro	Asn	Val	Ile	Tyr	Ser	Val	Thr	Asn	Leu	Glu	Glu	Tyr	145	150	155	160
Gln	Tyr	Val	Cys	Asn	Ser	Leu	Cys	Tyr	Arg	Arg	Thr	Met	His	Lys	Arg	165	170	175	
Gln	Gln	Pro	Cys	Asn	Gly	Gly	Ser	Val	Glu	Gln	Ser	Ser	Val	Ser	Leu	180	185	190	
Tyr	Ser	Asp	Gly	Glu	Pro	Ala	Asn	Lys	Lys	Ser	Lys	Val	Val	Thr	Val	195	200	205	
Arg	Gly	Glu	Lys	Phe	Cys	Ser	Leu	Val	Asp	Ser	Leu	Ile	Glu	Arg	Asn	210	215	220	
Ile	Phe	Asn	Glu	Asn	Lys	Trp	Lys	Glu	Thr	Asp	Phe	Lys	Glu	Tyr	Ala	225	230	235	240
Ala	Leu	Ser	Ala	Ser	Val	Ala	Gly	Val	His	Gln	Ile	Lys	Thr	Ala	Leu	245	250	255	
Thr	Leu	Ala	Val	Ser	Lys	Cys	Asn	Ser	Pro	Ala	Tyr	Leu	Gly	Glu	Ile	260	265	270	
Leu	Thr	Arg	Pro	Asn	Thr	Ile	Asn	Phe	Asn	Ile	Arg	Glu	Asn	Arg	Ile	275	280	285	
Ala	Asn	Ile	Phe	Leu	Ser	Asn	Asn	Tyr	Cys	Pro	Leu	Tyr	Ala	Gly	Lys	290	295	300	
Met	Phe	Leu	Ala	Trp	Val	Gln	Lys	Gln	Leu	Gly	Lys	Arg	Asn	Thr	Ile	305	310	315	320
Trp	Leu	Phe	Gly	Pro	Pro	Ser	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Met	Ser	325	330	335	
Leu	Ala	Ser	Ala	Val	Pro	Thr	Tyr	Gly	Met	Val	Asn	Trp	Asn	Asn	Glu	340	345	350	
Asn	Phe	Pro	Phe	Asn	Asp	Val	Pro	Tyr	Lys	Ser	Ile	Ile	Leu	Trp	Asp	355	360	365	
Glu	Gly	Leu	Ile	Lys	Ser	Thr	Val	Val	Glu	Ala	Ala	Lys	Ser	Ile	Leu	370	375	380	
Gly	Gly	Gln	Pro	Cys	Arg	Val	Asp	Gln	Lys	Asn	Lys	Gly	Ser	Val	Glu	385	390	395	400
Val	Ser	Gly	Thr	Pro	Val	Leu	Ile	Thr	Ser	Asn	Ser	Asp	Met	Thr	Arg	405	410	415	
Val	Val	Cys	Gly	Asn	Thr	Val	Thr	Leu	Val	His	Gln	Arg	Ala	Leu	Lys	420	425	430	
Asp	Arg	Met	Val	Arg	Phe	Asp	Leu	Thr	Val	Arg	Cys	Ser	Asn	Ala	Leu	435	440	445	

Gly Leu Ile Pro Ala Asp Glu Ala Lys Gln Trp Leu Trp Trp Ala Gln
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 Asn Asn Ala Cys Asp Ala Phe Thr Gln Trp His Leu Ser Ser Asp His
 465 470 475 480
 Val Ala Trp Lys Val Asp Arg Thr Thr Leu Cys His Asp Phe Gln Ser
 485 490 495
 Glu Pro Glu Pro Asp Ser Glu Leu Pro Ser Ser Gly Glu Ser Val Glu
 500 505 510
 Ser Phe Asp Arg Ser Asp Leu Ser Thr Ser Trp Leu Asp Val Gln Asp
 515 520 525
 Gln Ser Ser Ser Pro Glu Asn Ser Asp Val Glu Trp Asp Ile Ala Asp
 530 535 540
 Leu Leu Ser Asn Glu His Trp Ile Asp Asp Leu Gln Glu Asp Ser Cys
 545 550 555 560
 Ser Pro Pro Arg Cys Ser Thr Pro Val Ala Val Ala Glu Pro Val Glu
 565 570 575
 Val Pro Thr Gly Thr Gly Gly Gly Leu Lys Trp Glu Lys Asn Tyr Ser
 580 585 590
 Val His Asp Thr Asn Glu Leu Arg Trp Pro Met Phe Ser Val Asp Trp
 595 600 605
 Val Trp Gly Thr Asn Val Lys Arg Pro Val Cys Cys Leu Glu His Asp
 610 615 620
 Lys Glu Phe Gly Val His Cys Ser Leu Cys Leu Ser Leu Glu Val Leu
 625 630 635 640
 Pro Met Leu Ile Glu Lys Ser Ile Leu Val Pro Asp Thr Leu Arg Cys
 645 650 655
 Ser Ala His Gly Asp Cys Thr Asn Pro Phe Asp Val Leu Thr Cys Lys
 660 665 670
 Lys Cys Arg Asp Leu Ser Gly Leu Met Ser Phe Leu Glu His Glu
 675 680 685

<210> 44

<211> 2064

<212> DNA

<213> Simian parvovirus

<400> 44

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 ccttttttgg gttgcaagta ttttttgcaa gtggaggggca accattttga taatgggttt 240
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 gaaggggggtt ttaacaaagt gtttagcagac tttaacaagc ctactatcac tgttcagttt 360

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cagtatgtat gtaattctct ctgttatagg agaacaatgc ataaaaggca acaaccatgt 540
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2064

```

<210> 45

<211> 683

<212> PRT

<213> rhesus macaque parvovirus

<400> 45

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Met Asp Met Phe Arg Gly Val Ile Gln Leu Thr Ala Asn Ile Thr Asp
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```

```

Phe Ala Asn Asp Ser Trp Trp Cys Ser Phe Leu Gln Leu Asp Ser Asp
      20              25              30

```

```

Asp Trp Pro Glu Leu Arg Gly Val Glu Arg Leu Val Ala Ile Phe Ile
  35              40              45

```

```

Cys Lys Val Ala Ala Val Leu Asp Asn Pro Ser Gly Thr Ser Leu Gly
  50              55              60

```

```

Cys Lys Tyr Phe Leu Gln Ala Glu Gly Asn His Tyr Asp Ala Gly Phe
  65              70              75              80

```

```

His Val His Ile Val Ile Gly Gly Pro Phe Ile Asn Ala Arg Asn Val
      85              90              95

```

```

Cys Asn Ala Val Glu Thr Thr Phe Asn Lys Val Leu Gly Asp Leu Thr
      100              105              110

```

Asp	Pro	Ser	Met	Ser	Val	Gln	Phe	Lys	Pro	Ala	Val	Ser	Lys	Lys	Gly	115	120	125
Glu	Tyr	Tyr	Arg	Asp	Gly	Phe	Asp	Phe	Val	Thr	Asn	Tyr	Leu	Met	Pro	130	135	140
Lys	Leu	Tyr	Pro	Asn	Val	Ile	Tyr	Ser	Val	Thr	Asn	Leu	Glu	Glu	Tyr	145	150	155
Gln	Tyr	Val	Cys	Asn	Ser	Leu	Cys	Tyr	Arg	Lys	Asn	Met	His	Lys	Gln	165	170	175
His	Met	Val	Ser	Thr	Val	Asp	Ala	Ser	Ser	Ser	Ser	Phe	Met	Asn	Asp	180	185	190
Met	Tyr	Glu	Pro	Ala	Thr	Lys	Arg	Ser	Lys	Ser	Cys	Thr	Val	Lys	Gly	195	200	205
Glu	Lys	Phe	Arg	Asn	Leu	Val	Asp	Ser	Leu	Ile	Glu	Arg	Asn	Ile	Phe	210	215	220
Ser	Glu	Ser	Lys	Trp	Lys	Glu	Val	Asp	Phe	Asn	Glu	Phe	Ala	Arg	Leu	225	230	235
Ser	Ala	Ser	Val	Ala	Gly	Val	His	Gln	Ile	Lys	Thr	Ala	Ile	Thr	Leu	245	250	255
Ala	Val	Ser	Lys	Cys	Asn	Ser	Pro	Asp	Tyr	Leu	Phe	Gln	Ile	Leu	Thr	260	265	270
Arg	Pro	Ser	Thr	Ile	His	Phe	Asn	Ile	Lys	Glu	Asn	Arg	Ile	Ala	Gln	275	280	285
Ile	Phe	Leu	Asn	Asn	Asn	Tyr	Cys	Pro	Leu	Tyr	Ala	Gly	Glu	Val	Phe	290	295	300
Leu	Phe	Trp	Ile	Gln	Lys	Gln	Leu	Gly	Lys	Arg	Asn	Thr	Val	Trp	Leu	305	310	315
Tyr	Gly	Pro	Pro	Ser	Thr	Gly	Lys	Thr	Asn	Val	Ala	Met	Ser	Leu	Ala	325	330	335
Ser	Ala	Val	Pro	Thr	Tyr	Gly	Met	Val	Asn	Trp	Asn	Asn	Glu	Asn	Phe	340	345	350
Pro	Phe	Asn	Asp	Val	Pro	Tyr	Lys	Ser	Leu	Ile	Leu	Trp	Asp	Glu	Gly	355	360	365
Leu	Ile	Lys	Ser	Thr	Val	Val	Glu	Ala	Ala	Lys	Ser	Ile	Leu	Gly	Gly	370	375	380
Gln	Pro	Cys	Arg	Val	Asp	Gln	Lys	Asn	Lys	Gly	Ser	Val	Glu	Val	Thr	385	390	395
Gly	Thr	Pro	Val	Leu	Ile	Thr	Ser	Asn	Ser	Asp	Met	Thr	Arg	Val	Val	405	410	415

Trp Tyr Thr Val Thr Leu Val His Gln Arg Ala Leu Lys Asp Arg Met
 420 425 430
 Val Arg Phe Asp Leu Thr Val Arg Cys Ser Asn Ala Leu Gly Leu Ile
 435 440 445
 Pro Ala Asp Glu Ala Lys Gln Trp Leu Trp Trp Ala Gln Ser Gln Pro
 450 455 460
 Cys Asp Ala Phe Thr Gln Trp His Gln Val Ser Glu His Val Ala Trp
 465 470 475 480
 Lys Ala Asp Arg Thr Gly Leu Phe His Asp Phe Ser Thr Lys Pro Glu
 485 490 495
 Gln Glu Ser Asn Ala Lys Ser Ser Gly Lys Ser Asn Asp Ser Phe Ala
 500 505 510
 Gly Ser Asp Leu Ala Asn Leu Ser Trp Leu Asp Val Glu Asp Thr Ser
 515 520 525
 Ser Ser Ser Glu Ser Asp Leu Ser Gly Asp Ile Ala Glu Leu Val Ser
 530 535 540
 Asn Asp Asn Trp Leu Gln Ser Gly Cys Pro Pro Thr Arg Cys Ser Thr
 545 550 555 560
 Pro Val Thr Val Val Glu Pro Lys Gln Val Ser Pro Gly Thr Gly Gly
 565 570 575
 Gly Leu Thr Lys Trp Glu Lys Asn Tyr Ser Val His Gln Glu Asn Glu
 580 585 590
 Leu Ala Trp Pro Met Phe Ser Val Asp Trp Val Trp Gly Ser His Val
 595 600 605
 Lys Arg Pro Val Cys Cys Val Glu His Asp Lys Asp Leu Val Leu Pro
 610 615 620
 His Cys Asn Leu Cys Leu Ser Leu Glu Val Leu Pro Met Leu Ile Glu
 625 630 635 640
 Lys Ser Ile Asn Val Pro Asp Thr Leu Arg Cys Ser Ala His Gly Asp
 645 650 655
 Cys Thr Asn Pro Phe Asp Val Leu Thr Cys Lys Lys Cys Arg Asp Leu
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 Ser Gly Leu Met Ser Phe Leu Glu His Asp Gln
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<210> 46

<211> 2052

<212> DNA

<213> rhesus macaque parvovirus

<400> 46

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<210> 47

<211> 671

<212> PRT

<213> B19 virus

<400> 47

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Met Glu Leu Phe Arg Gly Val Leu Gln Val Ser Ser Asn Val Leu Asp
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Cys Ala Asn Asp Asn Trp Trp Cys Ser Leu Leu Asp Leu Asp Thr Ser
          20                      25                      30

Asp Trp Glu Pro Leu Thr His Thr Asn Arg Leu Met Ala Ile Tyr Leu
          35                      40                      45

Ser Ser Val Ala Ser Lys Leu Asp Phe Thr Gly Gly Pro Leu Ala Gly
          50                      55                      60

Cys Leu Tyr Phe Phe Gln Val Glu Cys Asn Lys Phe Glu Glu Gly Tyr
          65                      70                      75                      80

```


Lys Ala Ile Leu Gly Gly Gln Pro Thr Arg Val Asp Gln Lys Met Arg
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 Gly Ser Val Ala Val Pro Gly Val Pro Val Val Ile Thr Ser Asn Gly
 405 410 415
 Asp Ile Thr Phe Val Val Ser Gly Asn Thr Thr Thr Thr Val His Ala
 420 425 430
 Lys Ala Leu Lys Glu Arg Met Val Lys Leu Asn Phe Thr Val Arg Cys
 435 440 445
 Ser Pro Asp Met Gly Leu Leu Thr Glu Ala Asp Val Gln Gln Trp Leu
 450 455 460
 Thr Trp Cys Asn Ala Gln Ser Trp Asp His Tyr Glu Asn Trp Ala Ile
 465 470 475 480
 Asn Tyr Thr Phe Asp Phe Pro Gly Ile Asn Ala Asp Ala Leu His Pro
 485 490 495
 Asp Leu Gln Thr Thr Pro Ile Val Thr Asp Thr Ser Ile Ser Ser Ser
 500 505 510
 Gly Gly Glu Ser Ser Glu Glu Leu Ser Glu Ser Ser Phe Phe Asn Leu
 515 520 525
 Ile Thr Pro Gly Ala Trp Asn Thr Glu Thr Pro Arg Ser Ser Thr Pro
 530 535 540
 Ile Pro Gly Thr Ser Ser Gly Glu Ser Phe Val Gly Ser Ser Val Ser
 545 550 555 560
 Ser Glu Val Val Ala Ala Ser Trp Glu Glu Ala Phe Tyr Thr Pro Leu
 565 570 575
 Ala Asp Gln Phe Arg Glu Leu Leu Val Gly Val Asp Tyr Val Trp Asp
 580 585 590
 Gly Val Arg Gly Leu Pro Val Cys Cys Val Gln His Ile Asn Asn Ser
 595 600 605
 Gly Gly Gly Leu Gly Leu Cys Pro His Cys Ile Asn Val Gly Ala Trp
 610 615 620
 Tyr Asn Gly Trp Lys Phe Arg Glu Phe Thr Pro Asp Leu Val Arg Cys
 625 630 635 640
 Ser Cys His Val Gly Ala Ser Asn Pro Phe Ser Val Leu Thr Cys Lys
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 Lys Cys Ala Tyr Leu Ser Gly Leu Gln Ser Phe Val Asp Tyr Glu
 660 665 670

<210> 48

<211> 2016

<212> DNA

<213> B19 virus

<400> 48

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<210> 49

<211> 671

<212> PRT

<213> Erythrovirus B19

<400> 49

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      20             25             30

Asp Trp Glu Pro Leu Thr His Thr Asn Arg Leu Met Ala Ile Tyr Leu
      35             40             45

Ser Ser Val Ala Ser Lys Leu Asp Phe Thr Gly Gly Pro Leu Ala Gly
      50             55             60

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Cys	Leu	Tyr	Phe	Phe	Gln	Val	Glu	Cys	Asn	Lys	Phe	Glu	Glu	Gly	Tyr	65	70	75	80
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Thr	Met	Cys	Val	Glu	Gly	Leu	Phe	Asn	Asn	Val	Leu	Tyr	His	Leu	Val	100	105	110	
Thr	Glu	Asn	Val	Lys	Leu	Lys	Phe	Leu	Pro	Gly	Met	Thr	Thr	Lys	Gly	115	120	125	
Lys	Tyr	Phe	Arg	Asp	Gly	Glu	Gln	Phe	Ile	Glu	Asn	Tyr	Leu	Ile	Lys	130	135	140	
Lys	Ile	Pro	Leu	Asn	Val	Val	Trp	Cys	Val	Thr	Asn	Ile	Asp	Gly	Tyr	145	150	155	160
Ile	Asp	Thr	Cys	Ile	Ser	Ala	Thr	Phe	Arg	Arg	Gly	Ala	Cys	His	Ala	165	170	175	
Lys	Lys	Pro	Arg	Ile	Thr	Thr	Ala	Ile	Asn	Asp	Thr	Ser	Ser	Asp	Ala	180	185	190	
Gly	Glu	Ser	Ser	Gly	Thr	Gly	Ala	Glu	Val	Val	Pro	Phe	Asn	Gly	Lys	195	200	205	
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Glu	Asn	Arg	Val	Phe	Thr	Glu	Asp	Lys	Trp	Lys	Leu	Val	Asp	Phe	Asn	225	230	235	240
Gln	Tyr	Thr	Leu	Leu	Ser	Ser	Ser	His	Ser	Gly	Ser	Phe	Gln	Ile	Gln	245	250	255	
Ser	Ala	Leu	Lys	Leu	Ala	Ile	Tyr	Lys	Ala	Thr	Asn	Leu	Val	Pro	Thr	260	265	270	
Ser	Thr	Phe	Leu	Leu	His	Thr	Asp	Phe	Glu	Gln	Val	Met	Cys	Ile	Lys	275	280	285	
Asp	Asn	Lys	Ile	Val	Lys	Leu	Leu	Leu	Cys	Gln	Asn	Tyr	Asp	Pro	Leu	290	295	300	
Leu	Val	Gly	Gln	His	Val	Leu	Lys	Trp	Ile	Asp	Lys	Lys	Cys	Gly	Lys	305	310	315	320
Lys	Asn	Thr	Leu	Trp	Phe	Tyr	Gly	Pro	Pro	Ser	Thr	Gly	Lys	Thr	Asn	325	330	335	
Leu	Ala	Met	Ala	Ile	Ala	Lys	Ser	Val	Pro	Val	Tyr	Gly	Met	Val	Asn	340	345	350	
Trp	Asn	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp	Val	Ala	Gly	Lys	Ser	Leu	355	360	365	

Val	Val	Trp	Asp	Glu	Gly	Ile	Ile	Lys	Ser	Thr	Ile	Val	Glu	Ala	Ala	
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Asp	Ile	Thr	Phe	Val	Val	Ser	Gly	Asn	Thr	Thr	Thr	Thr	Thr	Val	His	Ala
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Thr	Trp	Cys	Asn	Ala	Gln	Ser	Trp	Asp	His	Tyr	Glu	Asn	Trp	Ala	Ile	
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	610					615					620					
Tyr	Asn	Gly	Trp	Lys	Phe	Arg	Glu	Phe	Thr	Pro	Asp	Leu	Val	Arg	Cys	
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Ser	Cys	His	Val	Gly	Ala	Ser	Asn	Pro	Phe	Ser	Val	Leu	Thr	Cys	Lys	
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 <212> DNA
 <213> Erythrovirus B19

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 <211> 490
 <212> PRT
 <213> Human herpesvirus 6B

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Pro His Phe Arg Asp Met His Ser Pro Gly Ala Pro Asp Ile Lys Trp
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 65 70 75 80
 Asn Lys Thr Ala Val Pro Thr Pro Ala Lys Trp Tyr Ala Gln Ala Glu
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 100 105 110
 Ile Pro Thr Ala Thr Ile Gly Lys His Thr Thr Glu Ile Arg Gly Val
 115 120 125
 Leu Ile Lys Asp Phe Phe Asp Gly Asn Ala Pro Lys Ile Asp Asp Trp
 130 135 140
 Cys Thr Tyr Ala Lys Thr Lys Lys Asn Gly Gly Gly Thr Gln Val Phe
 145 150 155 160
 Ser Leu Ser Tyr Ile Pro Phe Ala Leu Leu Gln Ile Ile Arg Pro Gln
 165 170 175
 Phe Gln Trp Ala Trp Thr Asn Ile Asn Glu Leu Gly Asp Val Cys Asp
 180 185 190
 Glu Ile His Arg Lys His Ile Ile Ser His Phe Asn Lys Lys Pro Asn
 195 200 205
 Val Lys Leu Met Leu Phe Pro Lys Asp Gly Thr Asn Arg Ile Ser Leu
 210 215 220
 Lys Ser Lys Phe Leu Gly Thr Ile Glu Trp Leu Ser Asp Leu Gly Ile
 225 230 235 240
 Val Thr Glu Asp Ala Trp Ile Arg Arg Asp Val Arg Ser Tyr Met Gln
 245 250 255
 Leu Leu Thr Leu Thr His Gly Asp Val Leu Ile His Arg Ala Leu Ser
 260 265 270
 Ile Ser Lys Lys Arg Ile Arg Ala Thr Arg Lys Ala Ile Asp Phe Ile
 275 280 285
 Ala His Ile Asp Thr Asp Phe Glu Ile Tyr Glu Asn Pro Val Tyr Gln
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 Leu Phe Cys Leu Gln Ser Phe Asp Pro Ile Leu Ala Gly Thr Ile Leu
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 Tyr Gln Trp Leu Ser His Arg Arg Gly Lys Lys Asn Thr Val Ser Phe
 325 330 335
 Ile Gly Pro Pro Gly Cys Gly Lys Ser Met Leu Thr Gly Ala Ile Leu
 340 345 350

Glu Asn Ile Pro Leu His Gly Ile Leu His Gly Ser Leu Asn Thr Lys
355 360 365

Asn Leu Arg Ala Tyr Gly Gln Val Leu Val Leu Trp Trp Lys Asp Ile
370 375 380

Ser Ile Asn Phe Glu Asn Phe Asn Ile Ile Lys Ser Leu Leu Gly Gly
385 390 395 400

Gln Lys Ile Ile Phe Pro Ile Asn Glu Asn Asp His Val Gln Ile Gly
405 410 415

Pro Cys Pro Ile Ile Ala Thr Ser Cys Val Asp Ile Arg Ser Met Val
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His Ser Asn Ile His Lys Ile Asn Leu Ser Gln Arg Val Tyr Asn Phe
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Thr Phe Asp Lys Val Ile Pro Arg Asn Phe Pro Val Ile Gln Lys Asp
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Asp Ile Asn Gln Phe Leu Phe Trp Ala Arg Asn Arg Ser Ile Asn Cys
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Phe Ile Asp Tyr Thr Val Pro Lys Ile Leu
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<210> 52

<211> 1473

<212> DNA

<213> Human herpesvirus 6B

<400> 52

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1473

<210> 53
 <211> 63
 <212> DNA
 <213> unidentified adenovirus

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 cga 63

<210> 54
 <211> 43
 <212> DNA
 <213> Homo sapiens

<400> 54
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<210> 55
 <211> 622
 <212> PRT
 <213> adeno-associated virus 2

<400> 55
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 20 25 30
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 35 40 45
 Glu Gln Ala Pro Leu Thr Val Ala Glu Lys Leu Gln Arg Asp Phe Leu
 50 55 60
 Thr Glu Trp Arg Arg Val Ser Lys Ala Pro Glu Ala Leu Phe Phe Val
 65 70 75 80
 Gln Phe Glu Lys Gly Glu Ser Tyr Phe His Met His Val Leu Val Glu
 85 90 95
 Thr Thr Gly Val Lys Ser Met Val Leu Gly Arg Phe Leu Ser Gln Ile
 100 105 110
 Arg Glu Lys Leu Ile Gln Arg Ile Tyr Arg Gly Ile Glu Pro Thr Leu
 115 120 125
 Pro Asn Trp Phe Ala Val Thr Lys Thr Arg Asn Gly Ala Gly Gly Gly
 130 135 140
 Asn Lys Val Val Asp Glu Cys Tyr Ile Pro Asn Tyr Leu Leu Pro Lys
 145 150 155 160

Thr	Gln	Pro	Glu	Leu	Gln	Trp	Ala	Trp	Thr	Asn	Met	Glu	Gln	Tyr	Leu	165	170	175
Ser	Ala	Cys	Leu	Asn	Leu	Thr	Glu	Arg	Lys	Arg	Leu	Val	Ala	Gln	His	180	185	190
Leu	Thr	His	Val	Ser	Gln	Thr	Gln	Glu	Gln	Asn	Lys	Glu	Asn	Gln	Asn	195	200	205
Pro	Asn	Ser	Asp	Ala	Pro	Val	Ile	Arg	Ser	Lys	Thr	Ser	Ala	Arg	Tyr	210	215	220
Met	Glu	Leu	Val	Gly	Trp	Leu	Val	Asp	Lys	Gly	Ile	Thr	Ser	Glu	Lys	225	230	235
Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala	245	250	255
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys	260	265	270
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln	275	280	285
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu	290	295	300
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala	305	310	315
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala	325	330	335
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro	340	345	350
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp	355	360	365
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala	370	375	380
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg	385	390	395
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val	405	410	415
Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ile	Asp	Gly	Asn	Ser	420	425	430
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe	435	440	445
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln	450	455	460

Glu Val Lys Asp Phe Phe Arg Trp Ala Lys Asp His Val Val Glu Val
 465 470 475 480

Glu His Glu Phe Tyr Val Lys Lys Gly Gly Ala Lys Lys Arg Pro Ala
 485 490 495

Pro Ser Asp Ala Asp Ile Ser Glu Pro Lys Arg Val Arg Glu Ser Val
 500 505 510

Ala Gln Pro Ser Thr Ser Asp Ala Glu Ala Ser Ile Asn Tyr Ala Asp
 515 520 525

Arg Tyr Gln Asn Lys Cys Ser Arg His Val Gly Met Asn Leu Met Leu
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Phe Pro Cys Arg Gln Cys Glu Arg Met Asn Gln Asn Ser Asn Ile Cys
 545 550 555 560

Phe Thr His Gly Gln Lys Asp Cys Leu Glu Cys Phe Pro Val Ser Glu
 565 570 575

Ser Gln Pro Val Ser Val Val Lys Lys Ala Tyr Gln Lys Leu Cys Tyr
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<211> 7

<212> PRT

<213> Simian virus 40

<400> 56

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<210> 57

<211> 5

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Lysosomal
 degradation sequence

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<210> 58

<211> 10

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic
stability sequence

<220>

<221> MOD_RES

<222> (3)..(6)

<223> Any amino acid

<400> 58

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